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ABSTRACT

This summary of three research reports presents general findings and recommendations on the subject of physical education programs in the province of Alberta, Canada--specifically on (1) the nature of the compulsory program of physical education and its acceptance by students and parents; (2) the imposed costs to students for their participation in the physical education program; and (3) the nature and incidence of injuries incurred by participants during the physical education class period, as well as during free play and in the intramural and extramural athletic programs operations. Part One of the summary report investigates: (1) the required nature of physical education; (2) the need for daily physical education; (3) the length of the physical education class; (4) class objectives; (5) evaluation of student physical education achievement; (6) extent of choice of activities; (7) student attitudes toward physical education; (8) teacher qualifications; and (9) facilities. Part Two presents major findings regarding: (1) school practices and policies in imposing additional student costs for physical education programs; (2) inhibiting effects of these costs on student participation; (3) regional, grade level, and program content factors upon varying cost levels; and (4) program finance and expenditure. Part Three presents a summary of analyses of physical education injuries by grade groups (K-6, 7-12), and discusses strategies for reducing injury incidence through preventive measures or educational procedures. (MB)

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A STUDY OF COMPULSORY PHYSICAL EDUCATION PROGRAMS IN ALBERTA: THE PROGRAMS, THEIR COSTS AND THE INCIDENCE OF INJURIES SUSTAINED BY STUDENTS

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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A Summary Report Submitted to

The Department of Education

The Government of Alberta

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February, 1977

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FOREWORD

This is a summary report of three separate reports entitled:

Study 1: The Required School Physical Education Program in Alberta.

Study 2: Physical Education Student Cost Analysis In Alberta Schools.

Study 3: An Analysis of Injuries Which Occurred In Physical Education, Intramural Activities, Extramural Activities and Free Play In A Selected Sample of Schools In The Province of Alberta During the 1975-76 School Year.

The above-mentioned reports have been printed in limited quantities and are available, while the supply lasts, from:

Planning and Research Branch
Alberta Education
10105 - 109 Street
Edmonton, Alberta
T5J 2V2

Copies of these reports have been provided to Regional Offices of Education and all Superintendents of Schools in the Province of Alberta.

A STUDY OF COMPULSORY PHYSICAL EDUCATION PROGRAMS IN ALBERTA: THE PROGRAMS, THEIR COSTS AND THE INCIDENCE OF INJURIES SUSTAINED BY STUDENTS

ACKNOWLEDGEMENTS

This study was planned as a result of expressed concerns by parents and others as to the nature of the required program of physical education and the degree of its acceptance by students and parents, the costs of the program and the incidence of injuries sustained by students. The actual research placed a heavy demand on a number of people and groups throughout the province whom we would like to recognize. The formulation and direction of the study was significantly shaped by a Steering Committee comprised of

Dr. W.R. Duke, Chairman
Dr. W.P. Eddy
Dr. E.A. Torgunrud
Mr. K. McKenna
Mr. C.M. Ward

This committee provided invaluable guidance to the research team but is in no way responsible for the content of the report itself.

Although it is impossible to specifically credit all of the individuals who helped with the study, the following people were of critical importance in many ways:

Colin Lorback
John Kramer
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Gordon Dunkley
Al Murray

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Harry Henshaw
John Reid
Larry Borysyk

Without the full cooperation of the superintendents, principals and physical education teachers who participated, this study could not have been properly undertaken and the results might not have reached the high levels of reliability and validity obtained. Their outstanding helpfulness re-affirms our belief in the high quality of people who operate our schools and who are responsible for the education of our children.

A special expression of appreciation to Ms. Sharon Duplessis who coordinated material, prepared questionnaires, typed letters, answered calls and performed numerous other roles.

There remains a final expression of gratitude to all of the teachers, parents, and especially the students who completed the data forms. They were helpful and, we believe, candid in their responses. Without their participation the study could not have been completed.

To all of these people and groups who aided in this project -- Thank you.

R.G. Glassford
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A STUDY OF COMPULSORY PHYSICAL EDUCATION PROGRAMS IN ALBERTA: THE PROGRAMS, THEIR COSTS AND THE INCIDENCE OF INJURIES SUSTAINED BY STUDENTS

In January, 1975 an agreement was entered into between the Department of Education and the authors of this report wherein the research team agreed to carry out a three phased study aimed at determining:

a) the nature of the compulsory program of physical education and its acceptance by students and parents;

b) the imposed costs to students for their participation in the physical education program; and

c) the nature and incidence of injuries incurred by participants during the physical education class period, as well as during free play and in the intramural and extramural athletic programs operations.

The specific objectives are set out in each of the individual reports as are the detailed findings and recommendations. These findings were based upon data obtained from a 10 per cent sample of the schools of Alberta (N = 126). The study covered the period of May 15, 1975 to June 18, 1976 although different components of the study had different time lines. The injury study spanned one calendar

year (May 15, 1975 to May 14, 1976) whereas the final data on the compulsory program and the program costs were collected between April 2, 1976 and June 18, 1976.

In all, 1,387 students from grades 4 to 6, 3,962 students from grades 7 to 10 (comprised of a primary sample of 3,081 students from the 126 schools randomly selected, and 881 male students from a secondary sample), and 1,694 parents completed the questionnaires devised for this study. The data for the program cost study were generated from reports submitted by 55 secondary schools and 5[illegible] elementary schools. The 595 injury reports produced the data for the injury study. Of these reports, 219 were sent in by elementary schools and 376 by secondary schools.

The key findings and recommendations that emerged from the study are summarized in the following section. Detailed accounts can be obtained from the substantive reports which are available from the Department of Education.

PART I: THE REQUIRED SCHOOL PHYSICAL EDUCATION PROGRAM IN ALBERTA

1. The required nature of physical education. The data obtained for this phase of the study clearly indicated that parents and students alike believe that physical education should remain as a compulsory part of a students education. Of the 1,694 parents who responded, 94.3 per cent supported the compulsory nature of the program, while 71.2 per cent of 1,631 secondary students and 52.5 per cent of 1,387 elementary students responded affirmatively (only 17.7 per cent and 31.7 per cent of the latter

groups respectively stated "No" to the question). In addition, the predominant proportion of all three groups felt that the program should be required up to grade 12. Based upon this support, *it is recommended that physical education be retained as a required subject in the school curriculum, and further, that the requirement be extended to grades 11 and 12.*

2. The need for daily physical education. When asked to indicate how often students should be offered physical education, the greatest single response from all three groups was that it be given on a daily basis (34.2 per cent, 44.6 per cent and 51.1 per cent respectively for parents, elementary and secondary students). Coupled with this response was a voice of concern as to the lack of cardio-respiratory fitness among all students. This expression of concern came from both the medical and the physical education professions and the responses of students and parents. These findings and expressed concerns produced the following recommendations:

a) *that the Department of Education and local school jurisdictions take the necessary steps to institute the provision of daily physical education at all grade levels, K through 12.*

b) *that physical educators throughout the province ensure that every student in their charge take part in a minimum of six (6) minutes per day of vigorous activity such that the heart rate reaches the minimal training effect level (approximately 150 beats per minute) during that period.*

3. The length of the physical education class. In view of the need for shower and change time, a significant aerobic component and skills practice time it was recommended *that the duration of the physical education class period be increased to provide for a minimum of 30 minutes daily of actual instruction at the elementary level and to 60 minutes daily in all grades at the secondary level.*

Further, it was strongly recommended *that teachers and school administrators make every effort to curtail the practice of cancelling physical education classes as a form of punishment (and, as far as possible, for any other reason).*

4. Objectives of physical education. While there are several desirable objectives of physical education as it is currently offered within Alberta, the objective which specifies the development of health and physical fitness was unquestionably the one most strongly advocated by both parents and students as being of primary importance. Their concern for this objective strengthened by a general stress on physical fitness development in Canada by a number of professional and governmental agencies produced the following recommendations: *that greater emphasis be placed on fitness programs and knowledge of fitness in the schools of Alberta, and that fitness activities receive greater emphasis in the physical education program at all levels so that students will regularly be involved in vigorous activity.*

5. Assessment of students in physical education. Parents expressed a concern with regard to the evaluation procedures currently being used to assess their children in the physical education program. The focus of their concern was on the testing of actual skill level as opposed to the growth and development which their child had undergone during the program. Students, too, noted a discrepancy when asked to state the basis upon which they believed they should be assessed and how they felt they were actually assessed. The inconclusiveness of the findings in this study and yet the strong expression of concern led to the recommendation *that the Department of Education or the provincial supervisor of physical education strike an ad hoc committee to study and recommend a suitable format to be used in assigning grades and/or assessing progress in physical education.*

6. The extent of choice of physical education activities. One of the key concerns that motivated the need for this study was the question of whether students should have greater input into the decision-making process by which activities were selected for the physical education program. There was some support for making provision for a greater degree of student choice in this matter. Of the parents polled, 34.9 per cent suggested more choice, 41.5 per cent felt the amount of selection currently available was about right and 23.5 per cent said less choice or were unsure. The secondary students were more in favour of choice (38.6 per cent said more, 36.4 per cent wanted some chance to make suggestions and the remainder were less concerned. Given this support, it was recommended *that students at the secondary level be given some opportunity for choosing the activities in which they will participate in physical education.*

7. Attitudes of students toward physical education. Three of every four students who participated in the study held a positive attitude toward physical education and physical activity. While this is encouraging, it also indicates that physical educators throughout the province face a substantial challenge if they wish to ensure a maximum benefit for every student in their classes which can accrue through a well-planned and properly-executed program.

8. Qualification of teachers. Although the question of teacher qualifications in physical education was not a planned section of the study, the written comments of parents make it difficult to ignore as an areas for consideration. Specifically, they were concerned about an overemphasis in school sport on winning, the failure of teachers to treat children as individuals with their individual needs and abilities, and the failure of the system to provide competent and qualified teachers for elementary school physical education. These expressed concerns produced a number of recommendations:

a) *that the Faculties of Education and Physical Education of Alberta universities in consultation and conjunction with Alberta School Districts create summer workshops designed to provide teachers already in the field, with materials, methods and content that will enhance the elementary physical education learning environment.*

b) *that each school nominate a staff member to attend the 1977 summer workshop in physical education. This individual would then act as a resouce person for the school's physical education program. Costs for participation would be borne by the School Board.*

c) *that all prospective elementary school teachers be required, as a part of their professional preparation, to take a basic content and method course in physical education.*

d) *that a significant part of this course be focussed upon growth and development characteristics of the child in the K to grade six age range.*

e) *that qualified internship coordinators and supervisors be appointed by the universities to supervise the teacher interns in their physical education classes so as to maximize the values accrued through the practicums.*

f) *that a series of manuals be created by the curriculum branch of the Department of Education designed to aid the elementary school teacher in program development and operation in such areas as movement education, aerobic exercises, outdoor pursuits, games of low organization and a conceptual approach to physical education.*

9. Facilities for physical education. Although very little attention was directed toward ascertaining the quality of existing facilities for physical education, it became quite obvious to the investigators in the course of visiting the schools used in this study that there is some disparity between rural and urban schools in general. While large urban school districts appear to have built school plants with reasonable facilities (gymnasium, changing rooms, showers, storage areas, instructor's offices) for physical education, such is not the case in small town

and rural areas. We must therefore recommend *that rural school jurisdictions be encouraged to utilize the current (School Buildings Board) grant structure to provide improved physical education-recreation facilities.*

PART II: Physical Education Student Cost Analysis in Alberta Schools

The following major findings of this study reflect the practises and policies of the schools which participated in this study.

1. The practice of imposing additional student costs to participate in physical education programmes in Alberta elementary and secondary schools was reported by every school in this study.
2. It was not possible to determine the degree to which imposed student costs were a discriminating factor against students desiring to participate in the physical education programmes. It seems self-evident, however, that if the programmes were not fettered with additional costs, more students would elect the optional courses in high school.
3. In secondary schools, physical education specialists were generally the key budget officers and supported the practice of charging additional costs to students for participating in the physical education programme. In elementary schools, the principal administered the physical education budget.
4. Imposed student costs in physical education were greater and more common in urban schools than rural.

5. There were differences in costs to physical education students at different grade levels and in various aspects of the physical education programme. Costs tended to increase as students progressed from elementary through secondary grades.
6. Generally, sex was not a factor in determining the incidence or magnitude of additional costs to students.
7. The practice of supporting and sponsoring special events and projects to increase budget revenue was common in secondary schools.
8. Physical education programmes would suffer in quality if additional budget revenue over and above School Board allocations was not found.
9. Unfortunately, it appeared that physical educators have proven to be more successful at raising funds through imposing extra costs on students and giving time and energy to revenue raising projects than gaining support and funding for their programmes from the school administration. This is a trend that will be difficult to change.
10. Expenditure of physical education funds appeared to be based on traditional guidelines.
11. Intramural programmes were generally free of imposed student costs.
12. Additional imposed costs to students on athletic teams in secondary schools were common to three or four sports.
13. Imposed participation costs to athletes were experienced by urban athletes more than rural athletes regardless of sex.

It is therefore recommended that:

a) *Each school in Alberta make a detailed study of additionally imposed student costs associated with participation in the physical education programme. Where these costs are identified, make a concerted effort with the cooperation of the School Board, administrators, teachers, pupils and parents to eliminate such assessments.*

b) *Programme planning with the inherent responsibilities for equipment, supplies, and materials for physical education be assigned to a physical education specialist. The implication therefore is that elementary schools include at least one physical education specialist on the teaching staff.*

c) *Physical educators in the schools provide sufficient supportive evidence for their programmes to the school principals with the objective of obtaining greater funding from the School Board operating budget allocation.*

d) *The Alberta Department of Education prepare a public statement reflecting the inappropriateness of schools levying additional student costs for participating in the physical education instructional programme.*

e) *A follow-up study be conducted in five years to determine whether or not progress towards the elimination of hidden tuition costs is being made.*

PART III: An Analysis of Injuries Which Occurred in Physical Education, Intramural Activities, Extramural Activities and Free Play in a Selected Sample of Schools in the Province of Alberta During the 1975-76 School Year

1. The majority of injuries among students in the K though 6th grades occurred during the recess periods in the morning and afternoon and during the noon hour break. *This finding suggests that a greater emphasis be directed toward the provision of supervisors and/or that organized programs of play be instituted during the recess and noon hour periods.*

2. In grades K through 6 open wounds occurred predominantly to the head and facial areas; sprains and fractures to the wrist, knee, finger, ankle, shoulder, thumb, elbow and upper arm; and teeth being loosened or broken accounted for 80 per cent of all injuries. *Teachers, coaches and supervisors should, therefore, be provided with first aid supplies, and be instructed in the emergency care procedures for these types of injuries.*

3. In grades 7 through 12 the most dangerous time of day for incurring an injury during physical activity was between noon and 1:00 p.m. *Therefore, the number of supervisors on duty at this time of day should be increased.*

4. The majority of injuries in grades 7 through 12 were of a relatively serious nature in that they resulted in considerable loss of participation time in physical activity. These injuries included sprains (29 per cent of all injuries), fractures

(19 per cent), and dislocations (7 per cent). Since these types of injuries occurred during physical education instruction, inter-scholastics, and the noon hour break *all physical education teachers and coaches should receive certification from a first-aid instructional organization as a minimum requirement* and preferably have successfully completed a course in athletic injuries as a pre-requisite for employment. *Further, someone knowledgeable in first aid procedures should be readily available during the noon hour break. An adequate first aid kit should be located somewhere in the school where it can be quickly reached at all times.*

5. In grades 7 through 12 certain activities produced a high incidence of injury to specific body areas. In most cases incidence of these injuries could be significantly reduced through the use of specific pieces of protective equipment, and through rule changes. *Foam helmets and gloves should be mandatory for floor hockey* since 40 per cent of the injuries in this sport were to the head and facial areas and 20 per cent to the hand. *Foam helmets should be mandatory in touch football* since 27 per cent of the injuries in this activity were to the head and facial area. Batter's helmets and catcher's *face masks should be mandatory in softball/baseball* since 38 per cent of the injuries in this activity were to the head and facial area. *A rule change should be made in volleyball which would not allow a player to cross the center line* since 24 per cent of the

injuries in this activity were to the foot and ankle where injury is often caused by a player landing on an opponent's foot.

6. Although the data is not conclusive, a number of activity-specific injury patterns occurred, the incidence of which probably could be reduced by a series of preventative measures or educational procedures.

   a) Given that 54 per cent of all gymnastics-related injuries resulted from falling off a piece of apparatus, *physical educators should train and ensure that "spotters" are properly positioned while students are performing on apparatus.*

   b) *Regulation flags (attached by velcro fastenings) should be mandatory equipment for flag football* to help reduce the 65 per cent body-contact-related injuries in this sport.

   c) *Instruction of proper tackling techniques in rugby* should be emphasized to help reduce the 69 per cent of injuries which resulted from normal body contact.

   d) Given that 13 per cent and 11 per cent of injuries in basketball and touch football, respectively, resulted from bodily contact other than accidental collision *physical educators should train and ensure that competent officials are present to enforce the rules during basketball and touch football games whether they occur during classes or intramurals.*

7. The overall incidence of injury in Alberta Schools resulting from participation in physical activity was very low (see Appendix C). From extrapolations, we predicted that 1.01 per cent of the grade K through 6, and 1.99 per cent of the grade 7 through 12 student population, respectively, were injured between May, 1975 and May, 1976. Looking at the total provincial school population in grades K through 12 we predicted that approximately 1.5 per cent or 6,684 students were injured during the study period. It must be noted that if injuries limited to those which occurred in physical education classes only had been reported, the number reported would be substantially lower (.31 per cent in the elementary grades, 1.21 per cent at the secondary level, and .75 per cent overall). (These percentages can be obtained from Tables IV and XVII in Appendices D and E.)

Some general recommendations are:

a) *that a booklet on the prevention and care of injuries in games, sports, athletics and physical activities be developed and distr buted to teachers and coaches in the province of Alberta. Information bulletins on safety practices, for general and specific activities should be made available through the provincial physical education supervisors.*

b) *that all schools in the province be encouraged to implement an accident reporting and investigation system as soon as practically feasible. Data obtained from such systems could be used to prepare periodic summaries which could be utilized to ascertain or determine trends in the incidence, nature and causes of injuries in comparing past accident information with present statistics in local school districts as well as in the province as a whole.*

c) *that a provincial school safety coordinator or supervisor be appointed. This appointee would analyze sports injury statistics annually, initiate accident preventative programs through the schools in the province and develop a library of resource materials for use by teachers and coaches.*